● General Description

The AGM3401E combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

This device is ideal for load switch and battery protection applications.

● Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

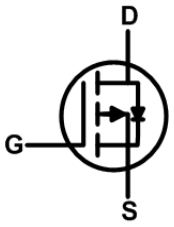
● Application

- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

Product Summary

BVDSS	RDSON	ID
-30V	40mΩ	-4.4A

SOT-23-3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
3401E	AGM3401E	SOT-23-3	----	----	3000

Table 1. Absolute Maximum Ratings (TA=25℃)

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-30	V
VGS	Gate-Source Voltage (VDS=0V)	±12	V
ID	Drain Current-Continuous(TA=25℃) **(Note 1)**	-4.4	A
	Drain Current-Continuous(TA=100℃)	-3.5	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	-27	A
PD	Maximum Power Dissipation(TA=25℃)	1.2	w
	Maximum Power Dissipation(Tc=70℃)	0.8	w
EAS	Avalanche energy **(Note 3)**	--	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State)[1]	---	104	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	--	℃/W

Table 3. Electrical Characteristics (TA=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-30	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-30V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±12V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-0.6	-0.9	-1.4	V
gFS	Forward Transconductance	VDS=-5V,ID=-15A	--	15	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-4.4A	--	40	55	mΩ
		VGS=-4.5V, ID=-4.0A	--	47	66	mΩ
		VGS=-2.5V, ID=-2.0A	--	60	964	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-15V,VGS=0V, F=1MHZ	--	1040	--	pF
Coss	Output Capacitance		--	80	--	pF
Crss	Reverse Transfer Capacitance		--	68	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	15	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-15V, RGEN=3Ω,ID=-4.4A	--	4.4	--	nS
tr	Turn-on Rise Time		--	26	--	nS
td(off)	Turn-Off Delay Time		--	49	--	nS
tf	Turn-Off Fall Time		--	43	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-15V, ID=-4.4A	--	22	--	nC
Qgs	Gate-Source Charge		--	3.2	--	nC
Qgd	Gate-Drain Charge		--	2.1	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-4.4	A
VSD	Forward on Voltage	VGS=0V,IS=-4.4A	--	--	-1.2	V
trr	Reverse Recovery Time	IF=-4.4A , dI/dt=100A/μs , TJ=25℃	--	10	--	ns
Qrr	Reverse Recovery Charge		--	16	--	nc

Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25℃

■ Typical Performance Characteristics

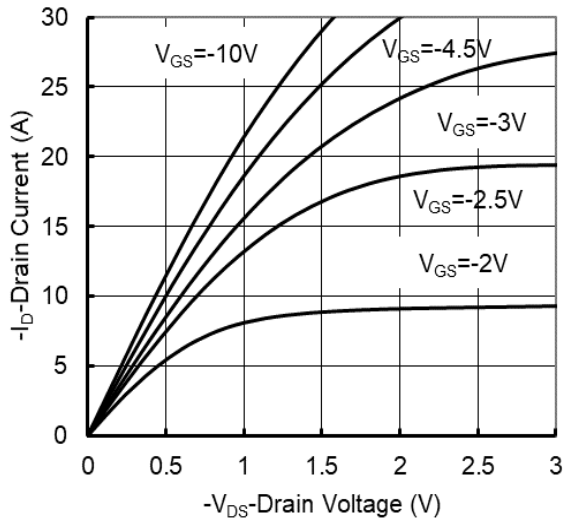


Figure1. Output Characteristics

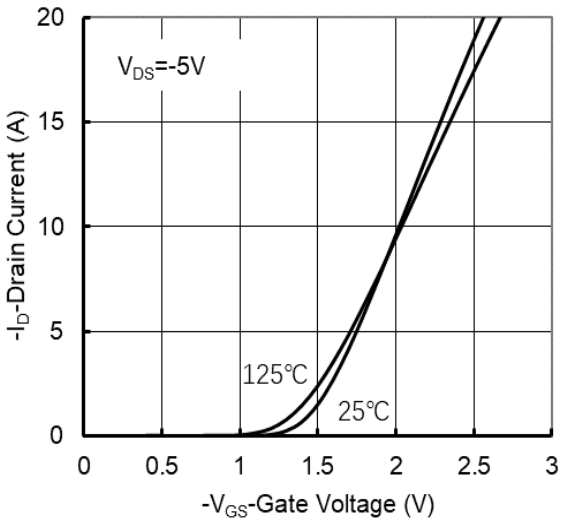


Figure2. Transfer Characteristics

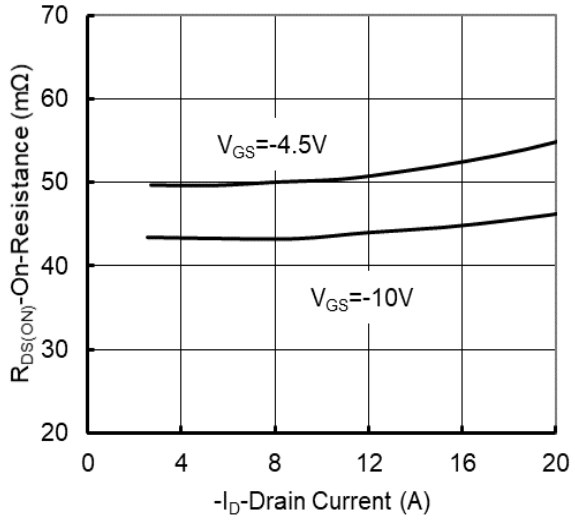


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

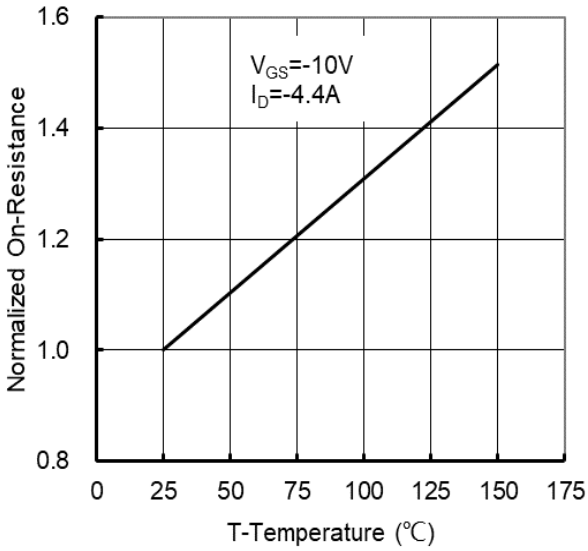


Figure 4: On-Resistance vs. Junction Temperature

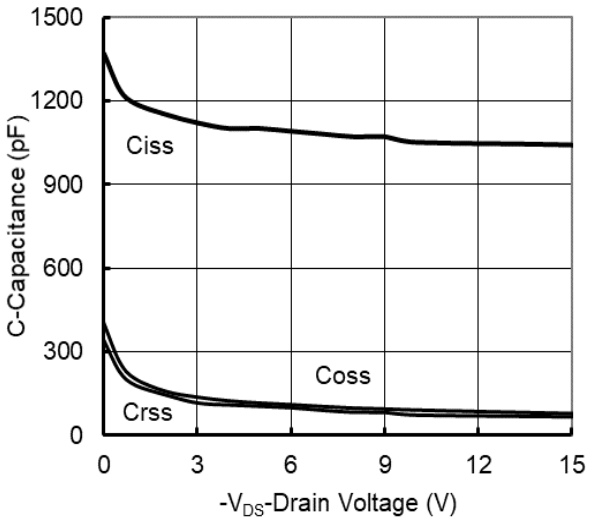


Figure5. Capacitance Characteristics

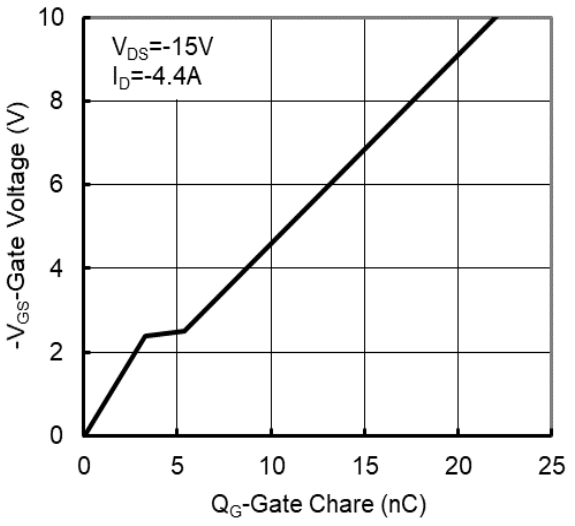


Figure6. Gate Charge

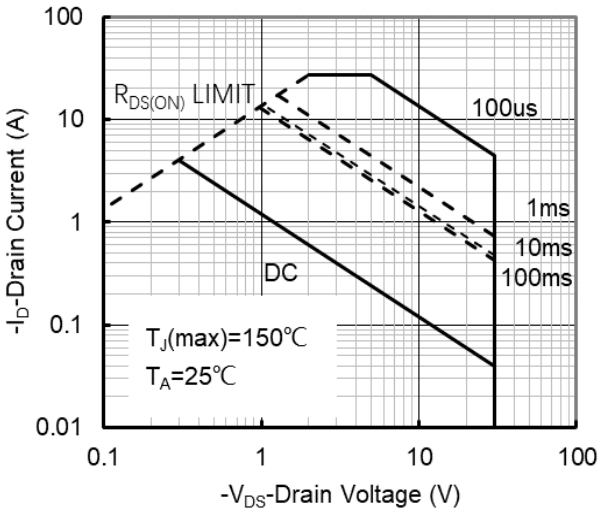


Figure7. Safe Operation Area

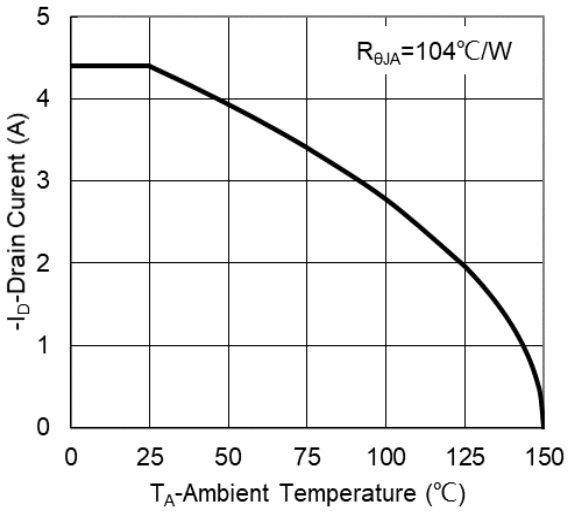


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

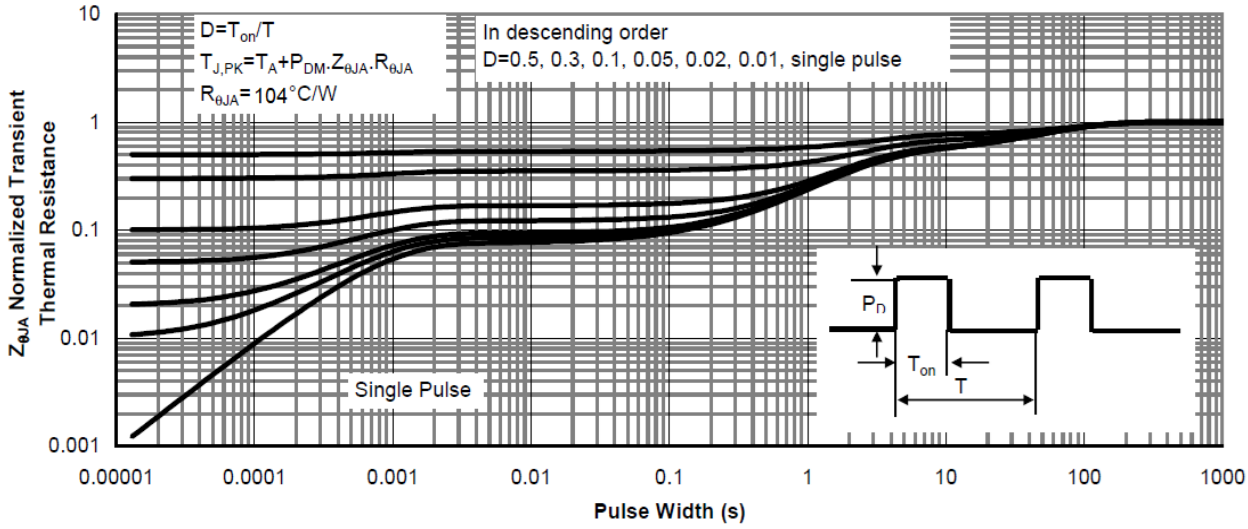
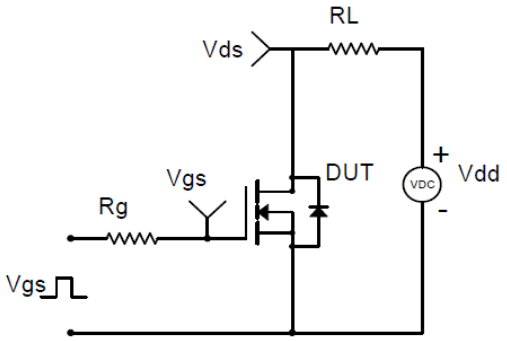
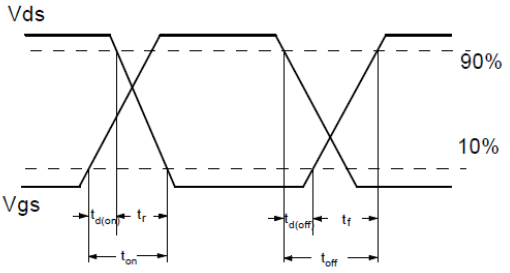
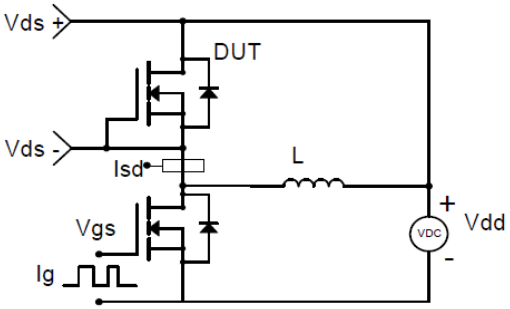


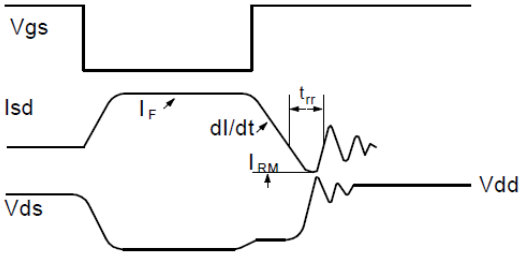
Figure9. Normalized Maximum Transient Thermal Impedance



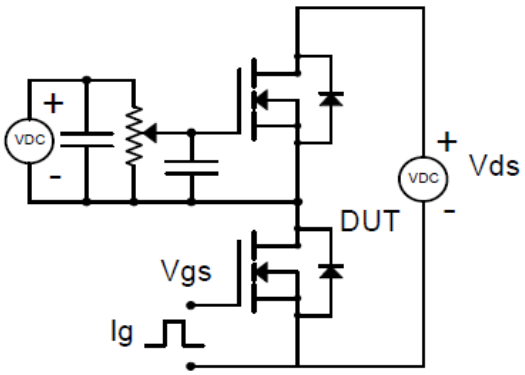


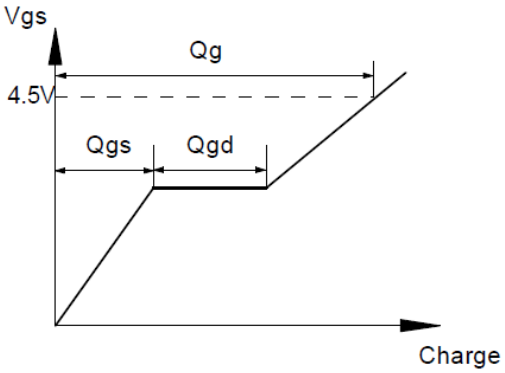
Resistive Switching Test Circuit & Waveforms



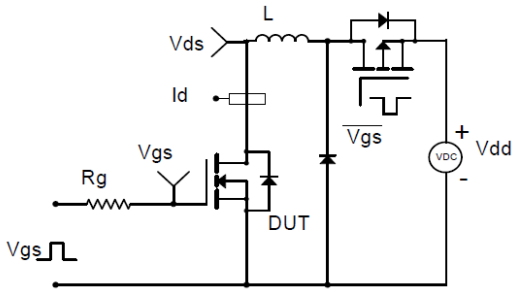


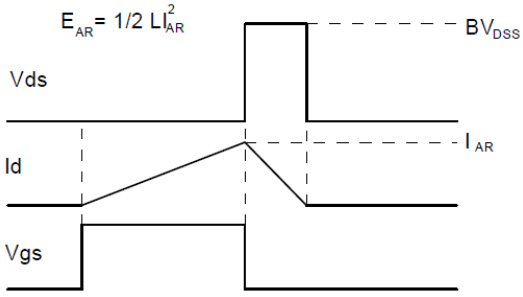
Diode Recovery Test Circuit & Waveforms





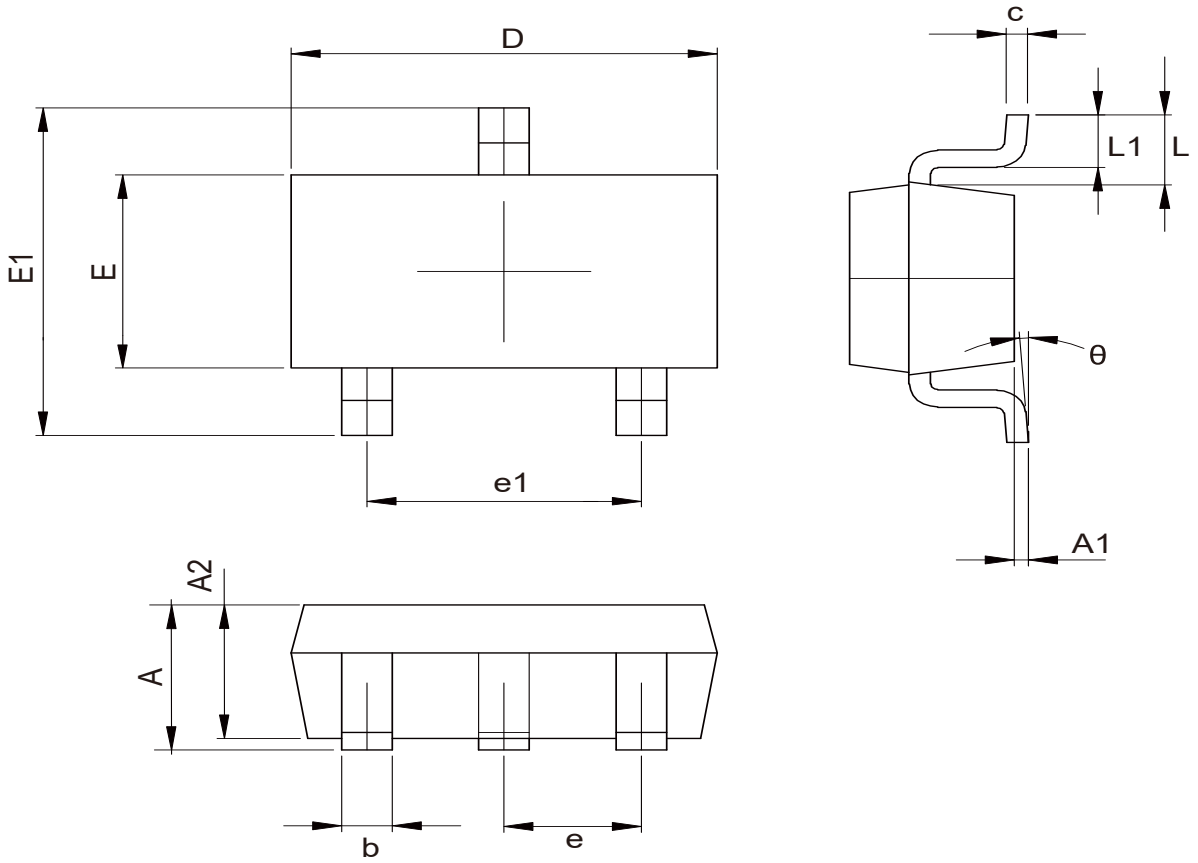
Gate Charge Test Circuit & Waveform





Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

SOT-23-3L
PACKAGE OUTLINE DIMENSIONS



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	1.050	——	1.300
A1	0.000	——	0.200
A2	1.050	——	1.200
b	0.300	0.400	0.500
c	0.100	——	0.200
D	2.820	2.900	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
e	0.950TYP		
e1	1.800	1.900	2.000
L	0.6REf		
L1	0.300	0.450	0.600
θ	0°	--	8°

Unit:mm

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